A NEW SPECIES OF *ATTENUATELLA* (BRACHIOPODA: SPIRIFERIDA) FROM THE PERMIAN OF QUEENSLAND.

J. D. Armstrong
and
C. D. Brown
Department of Geology, University of Queensland

ABSTRACT

Attenuatella australis sp. nov. is described from the siltstone unit underlying the Gigoomgan limestone in the Maryborough Basin, Queensland. The species occurs with invertebrates typical of the Tiverton Formation in the Bowen Basin and is thus probably of Lower Artinskian (Aktastinian) age.

The species described in this paper occurs about 600 feet below the base of the Gigoomgan limestone (Richards and Bryan, 1932, p. 295) in the Maryborough Basin, and it is associated with a fauna that includes *Anidanthus springsurensis* (Booker), *Cancrinella farleyensis* (Etheridge and Dun), *Ingelarella ovata* Campbell, and *I. profunda* Campbell. This fauna is correlative with that in the Tiverton Formation in the Bowen Basin (Dickins's (1964) Fauna II), and is probably of Lower Artinskian (Aktastinian) age (Dear, 1966; Armstrong *et al.,* 1967; Dickins, in press). The specimens of *Attenuatella australis* sp. nov. were collected by Brown and first recorded and described in an unpublished manuscript by Brown (1964).

Outside Australia, *Attenuatella* Stehli occurs in the Permian of Russia, North America, New Caledonia, and New Zealand (Landis & Waterhouse, 1966) and its known range is from the Artinskian to the lower part of the Upper Permian.

All the figured specimens of *Attenuatella australis* sp. nov. are housed in the Department of Geology and Mineralogy, University of Queensland and are designated by a number prefixed by UQF. Topotypic material has been lodged in the collections of the Queensland Museum.

Subfamily AMBOCOELIINAE George, 1931

Genus **Attenuatella** Stehli, 1954

TYPE SPECIES (by original designation): *Attenuatella texana* Stehli (1954, p. 343, pl. 25, figs 31–33) from the Lower Leonardian, Bone Spring Formation, Texas.

Attenuatella australis sp. nov.

(Fig. 1; pl. 8, figs. 1-16.)

HOLOTYPE: UQF52677 from about 600 feet below the base of the Gigoomgan limestone in the Maryborough Basin, Queensland. The holotype is from a locality one mile north-east of Gigoomgan homestead, about 33 miles west-south-west of Maryborough, Queensland.

DIAGNOSIS: Ventral valve strongly inflated with a narrow sulcus for its entire length; umbo incurved for up to one-quarter of the valve length; in profile the umbo is ventral to the commissural plane; dorsal valve convex rostrally, but concave near the commissure; on its posterior third the valve bears two low diverging folds; micro-ornament on both valves of spines, 7 to 10 per millimetre arranged in obscurely concentric lines; ventral diductors elongate, located on the inner slopes of ridges bordering the posterior part of the adductor area.

DESCRIPTION: The shell is concavo-convex with a broadly uniplicate commissure. It has an elongate inflated ventral valve, and an approximately semi-circular reflexed dorsal valve. The ventral umbo is high, narrow, and variably incurved but in profile does not attain the level of the commissure (fig. 1: A, B, C). Only the tip of the beak is inrolled, and from the posterior edge of the shell the beak may extend forwards for up to one-quarter of the shell length. The specimen of *A. australis* having the most inrolled umbo is shown in plate 8, fig. 10, whereas the umbones of the holotype and the specimen in plate 8, fig. 8 are typical of the majority of specimens of the species. The ventral area is strongly curved apically and at the hinge line is almost perpendicular to the commissural plane. There is a narrow but distinctive sulcus for the entire length of the valve; otherwise the flanks of the valve are smooth. Cardinal extremities are obtusely rounded, and the greatest shell width is in front of the hinge line. The dorsal area is catacline and is only one-quarter as high as the ventral area. The dorsal valve is gently convex rostrally but becomes flattened and then distinctly concave towards the commissure. A pair of low folds diverge antero-laterally from the beak. The folds occur only on the posterior convex part of the valve and between them there is a shallow depression. The shape of the valve is somewhat variable as in *Attenuatella incurvata* Waterhouse (1964, pl. 20, figs 10-12). Both valves of *A. australis* are covered with obscurely concentric lines, about 0·2 mm apart, of fine cylindrical spines, and along each line there are 7 to 10 spines per millimetre. A small groove runs towards the commissure for a short distance from each spine (plate 8, fig. 16).

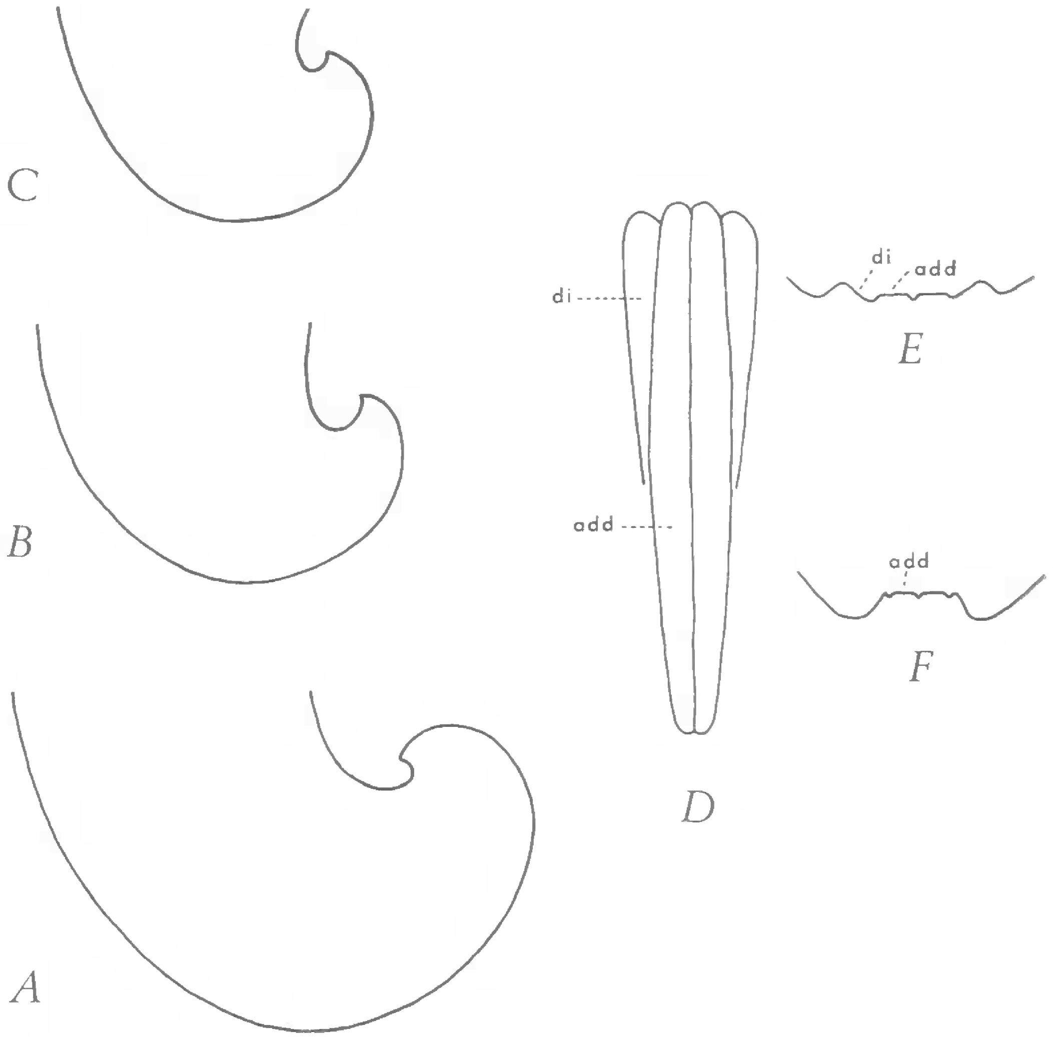

FIG. 1: *Attenuatella australis* sp. nov.

A, B, C. Camera lucida drawings of lateral views of three ventral valves, UQF46648, UQF52676, and UQF52679 respectively (× 4·75).

D. Diagrammatic representation of the muscle field in the ventral valve; di, diductor attachment area; add, adductor attachment area (approx. × 7·5).

E, F. Sections through the posterior and anterior parts respectively of the ventral muscle field.

In the ventral valve the area of muscle attachment is posteriorly a depressed region between two prominent ridges, and anteriorly a raised platform with small ridges along its sides (fig. 1: D, E, F). The diductors were attached to the inner slopes of the ridges and extended for a half to two-thirds of the length of the platform. The areas of adductor attachment occupied the entire length of the platform. Adductor and diductor fields were separated by small grooves and a narrow depression divided the adductor areas. A delthyrial plate occupies the apical third of the delthyrium but is not depressed below the level of the area.

The cardinal process is tuberculate and lies between the posterior ends of the inner socket ridges (plate 8, figs 1, 2). These ridges are confluent with the crural bases. The shell is impunctate.

DISTRIBUTION: *Attenuatella australis* is known only from the type locality.

AGE: Lower Permian, probably Lower Artinskian (Aktastinian).

COMPARISON: *Attenuatella australis* differs from *A. texana* Stehli (Stehli, 1954, p. 343, pl. 25, figs 31-33) of Lower Leonardian age in having a more distinct median depression in the ventral valve. The Wordian species *A. attenuata* (Cloud) (Cloud, 1944, pp. 62-3, pl. 17, figs 22-25) has a more inrolled beak, a gently convex dorsal valve and a less obvious ventral sulcus. *A. incurvata* Waterhouse (Waterhouse, 1964, pl. 20, figs 1-12, pl. 21, figs 1-9) of possible Kazanian age may be distinguished by its less prominent ventral sulcus, generally narrower, more posteriorly elongate ventral valve, and more incurved beak. In *A. australis* the ratio of the length of the incurved part of the ventral valve to the length of the shell is less than one-quarter, whereas in *A. incurvata* it is about one-third; generally only the tip of the beak is inrolled in *A. australis.* Moreover in *A. australis* the ventral umbo is always ventral to the commissural plane whereas in *A. incurvata* it reaches or is dorsal to this plane (Waterhouse, 1964, pl. 20, figs 2 and 11). The incurved part of the umbo of *Attenuatella* sp. figured by Waterhouse (1966, pl. 1, figs 1-5) from the Wesney Silkstone in the Eglinton Volcanics in New Zealand is also relatively small but this species has a flat costate dorsal valve and an almost imperceptible sulcus in the ventral valve. The species *A. acutirostrus* (Krotova) (Krotova, 1885, pl. 4, fig. 24) from the Artinskian of Russia is perhaps most similar to *A. australis;* however the former species has a very distinct sulcus in the ventral valve.

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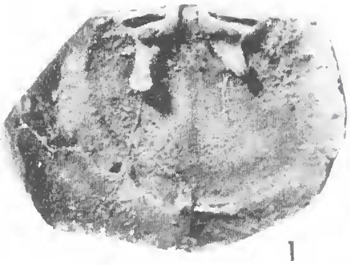

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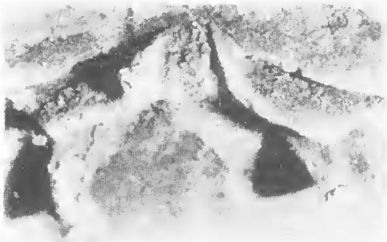

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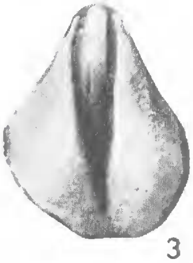

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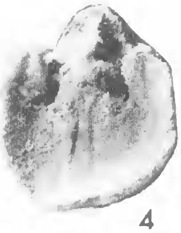

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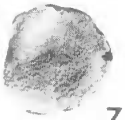

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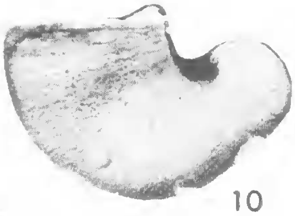

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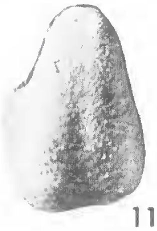

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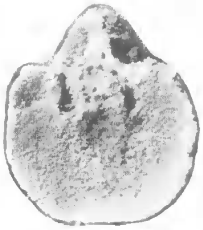

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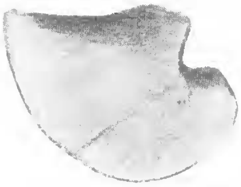

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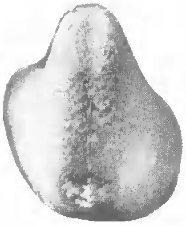

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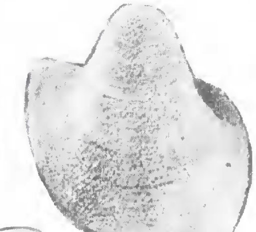

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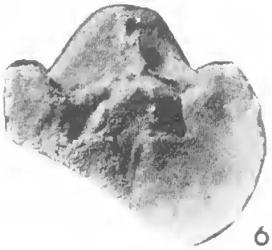

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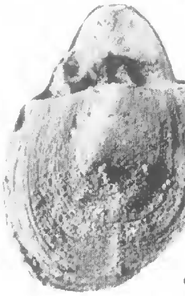

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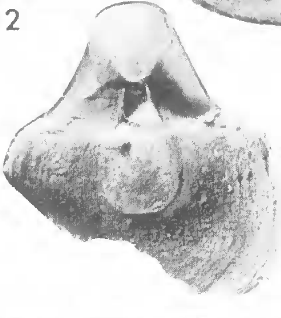

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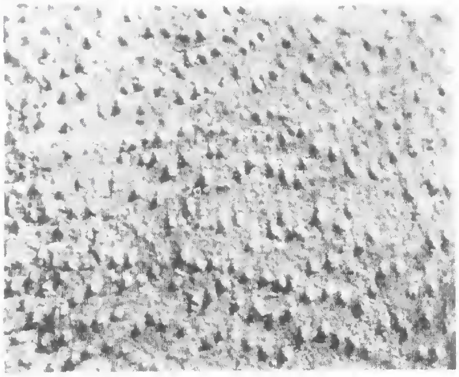

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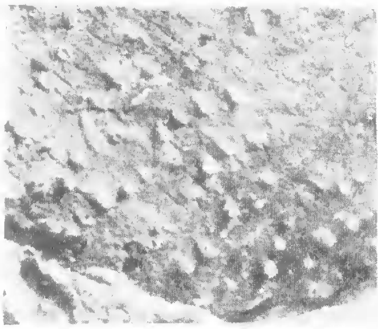

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